## (19) World Intellectual Property Organization

International Bureau



# 

(43) International Publication Date 31 December 2003 (31.12.2003)

## (10) International Publication Number WO 2004/000455 A1

(51) International Patent Classification7: C07C 51/31, 51/265

B01J 23/22,

(74) Agent: RIEGLER, Norbert Hermann; Lonza AG. Münchensteinerstrasse 38, CH-4052 Basel (CH).

(21) International Application Number:

PCT/EP2003/006494

(22) International Filing Date: 19 June 2003 (19.06.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

MI2002A001358

19 June 2002 (19.06.2002)

(71) Applicant (for all designated States except US): LONZA SPA [IT/TT]; Via Enrico Fermi, I-24020 Scanzorosciate (IT).

(72) Inventors; and

(75) Inventors/Applicants (for US only): CAVANI, Fabrizio [IT/IT]; Via San Giovanni Bosco, 78. I-41100 Modena (IT). FUMAGALLI, Carlo [IT/IT]; Via Conti Albani, 2/c, I-24061 Albano Sant'Alessandro (IT). LEANZA, Roberto [TT/TT]: Via Val di Sole, 11, I-20141 Milano (IT). MAZZONI, Gianluca [IT/IT]; Via Marzanica, 1, I-24020 Torre Boldone (IT). PANZACCHI, Barbara [IT/IT]; Via delle Armi, 6. I-40141 Bologna (IT).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ. BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE. DK. DM. DZ, EC. EE, ES, FI, GB, GD, GE, GH, GM, HR. HU. ID, IL, IN. IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,

MX, MZ, NI. NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,

SD. SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG,

US, UZ. VC, VN, YU, ZA, ZM. ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES. FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO. SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declaration under Rule 4.17:

of inventorship (Rule 4.17(iv)) for US only

### Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TITANIUN-VANADIUM-TIN COMPRISING CATALYST AND PROCESS FOR THE PREPARATION OF PHTHALIC ANHYDRIDE

(57) Abstract: Disclosed are catalytic compositions comprising oxides of titanium, vanadium and tin which are suitable for the production of phthalic anhydride by oxidizing o-xylene and/or napthalene in the gas phase. The catalysts exibit excellent activity and selectivity. The catalyst comprise 2 to 15% by weight (calculated as V<sub>2</sub>O<sub>5</sub>) of vanadium, from 1 to 15% by weight (calculated as SnO<sub>2</sub>) of tin and further comprise from 70 to 97% by weight (calculated as TiO<sub>2</sub>) of titanium. In a preferred embodiment the catalyst of the invention comprise up to 5% by weight (calculated as M<sub>2</sub>O) of at least one alkali metal, preferably lithium, potassium or rubidium, and more preferrably cesium. In an even more preferred embodiment, cesium is present in an amount of from 0.01 to 2% by weight (calculated as Cs2O).

